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Updated September 26, 2025

North Korea's Nuclear Weapons and Missile Programs

Overview

Over the past decade, the Democratic People's Republic of Korea (DPRK, or North Korea) has advanced its nuclear weapons and ballistic missile programs, raising the threat Pyongyang poses to the United States homeland, U.S. allies in East Asia, and U.S. interests. Congress could examine current U.S. policy responses, including the implementation of sanctions, diplomatic efforts, and the impact on U.S. and allied forces.

U.S. policies and multiple United Nations Security Council (UNSC) resolutions have imposed sanctions and called on North Korea to abandon its nuclear weapons and ballistic missile programs and eliminate them in a "complete, verifiable and irreversible manner." North Korean leader Kim Jong-un has repeatedly rejected denuclearization negotiations since the most recent talks in 2019 between President Donald Trump and Kim broke down. According to the U.S. intelligence community's 2025 annual threat assessment (ATA), Kim Jong-un views nuclear weapons as a "guarantor of regime security" and has "no intention" to renounce them.

Nuclear Doctrine and Plans

North Korean laws and doctrine governing the purpose and employment of nuclear weapons appear to affirm this 2025 ATA assessment. In May 2012, North Korea changed its constitution to describe the country as a "nuclear-armed state." The following year, the DPRK People's Assembly adopted a law stipulating that Pyongyang's nuclear weapons "serve the purpose of deterring and repelling the aggression and attack of the enemy against the DPRK and dealing deadly retaliatory blows." According to a 2013 law, North Korea's nuclear weapons "can be used only by a final order of the Supreme Commander of the Korean People's Army [a position held by Kim] to repel invasion or attack from a hostile nuclear weapons state and make retaliatory strikes." A September 2022 law further codified these policies and outlined the conditions under which North Korea would use nuclear weapons, which some analysts say lower the threshold for nuclear use.

The 2013 law also stated the "DPRK shall take practical steps to bolster up the nuclear deterrence and nuclear retaliatory strike power both in quality and quantity." In January 2021, the DPRK announced a Five-Year Defense Plan to field a new nuclear-capable submarine, develop tactical nuclear weapons, deploy multiple warheads on a single missile, and improve the accuracy of Intercontinental Ballistic Missiles (ICBMs), among other goals. The plan also includes development of an ICBM with a range of 15,000 km for "preemptive and retaliatory nuclear strike," as well as ground-based and sea-based solid-fueled ICBMs. Some analysts predict that North Korea will test missiles at a higher rate later this year in order to meet these goals by 2026. In September 2023, Kim announced that Pyongyang would boost nuclear weapons production "exponentially" and diversify nuclear strike options. In August 2025, Kim said the country was pursuing a "rapid expansion of nuclearization."

Nuclear Material Production

North Korea reportedly continues to produce fissile material (plutonium and highly enriched uranium) for weapons. Fissile material production in large part determines the number and type of nuclear warheads a country is able to build. After it withdrew from a nuclear agreement in 2009, North Korea restarted plutonium production activities at its Yongbyon site. North Korea also operates gas centrifuge uranium enrichment plants. In June 2025, the International Atomic Energy Agency (IAEA) reported continued operations at the Yongbyon uranium centrifuge enrichment plant and "undeclared enrichment facilities" at both Kangson and Yongbyon.

Nuclear Testing

North Korea has tested a nuclear explosive device six times, beginning in 2006 at its Punggye-ri nuclear test site. The underground tests, which were apparently conducted to improve nuclear warhead designs, produced increasing estimated yields. North Korea last conducted a nuclear test on September 3, 2017. North Korea characterized its most recently tested nuclear explosive device as a hydrogen bomb (or two-stage thermonuclear warhead) for deployment on an ICBM. In 2018, North Korea announced it had achieved its goals and would no longer conduct nuclear tests, and dynamited the entrances to two test tunnels. IAEA has reported that North Korea began restoring test tunnels in March 2022. A 2025 U.S. Defense Intelligence Agency (DIA) report stated, "North Korea has restored its nuclear test site and is now postured to conduct a seventh nuclear test at a time of its choosing."

Nuclear Warheads

According to DPRK government statements and U.S. government assessments, North Korea aims to increase its stockpile of nuclear warheads and improve their design for multiple delivery systems. Some nongovernmental experts estimate that North Korea has produced enough fissile material for up to 90 warheads but may have assembled approximately 50. Producing a nuclear warhead suitable for deployment on missiles is a key step in a nuclear weapons program. According to then-Secretary of Defense nominee Pete Hegseth's response to the Senate Armed Services Committee, North Korea is "improving miniaturization of warheads." Kim Jong-un in January 2021 said the country was able to "miniaturize, lighten and standardize nuclear weapons and to make them tactical ones."

In a January 1, 2023, speech, Kim said the country would expand its nuclear arsenal, including the mass production tactical nuclear weapons. In March 2023, according to the

2024 ATA, Kim ordered "an increase in the nuclear weapons stockpile and the expansion of weapon[s]-grade nuclear material production." The 2024 ATA stated, "North Korea also unveiled a purported tactical nuclear warhead and claimed it could be mounted on at least eight delivery systems, including an unmanned underwater vehicle and cruise missiles."

Ballistic Missile Testing

Under Kim Jong-un, North Korea has accelerated the pace of its ballistic missile test launches. A ballistic missile is a projectile powered by a rocket engine until it reaches the peak (or *apogee*) of its trajectory, at which point it falls back to earth using earth's gravity. Ballistic missiles can deliver nuclear and conventional payloads at high speed and over great distances. They are categorized as short-range, medium-range, or long-range (i.e., intermediate range and intercontinental) based on the distance from the launch site to the target. North Korea's inventory comprises both solid-fueled missiles, which offer advantages in maintenance and mobility, and liquid-fueled missiles, which have greater thrust and power than solid propellants.

In developing its ballistic missile forces, North Korea has prioritized capabilities "designed to evade U.S. and regional missile defenses, improve the North's precision strike capabilities, and put U.S. and allied forces at risk," according to the 2025 ATA. A U.S. intelligence official stated in May 2025 congressional testimony that North Korea's ballistic missile tests "signal continued progress toward North Korea's stated defense modernization goal of improving its deterrence threat against the United States."

North Korea continues to test its ballistic missiles to improve their reliability, effectiveness, and survivability. An increase in military cooperation with Russia may accelerate these efforts. In 2025 testimony, the U.S. Forces Korea Commander said that in return for North Korea's assistance in its war against Ukraine, "Russia is expanding sharing of space, nuclear, and missile-applicable technology, expertise, and materials to the DPRK," and that "Russia's expanded cooperation will enable advancements of DPRK's weapons of mass destruction (WMD) program across the next three to five years."

Intercontinental and Intermediate Range Missiles

North Korea has advanced its ability to strike the U.S. homeland with an ICBM through a series of tests, first in 2017, then in 2022, four times in 2023, and most recently in October 2024. The DPRK first successfully tested two liquid-fueled, road-mobile ICBMs in 2017: the Hwasong-14 (U.S. designated KN-20) and Hwasong-15 (KN-22). North Korea began test launching the larger Hwasong-17 (KN-28) ICBM in 2022. In April, July, and December 2023, North Korea tested its solid-fueled ICBM, the Hwasong-18. In October 2024, North Korea tested the solid-fueled Hwasong-19, which one U.S. official said in congressional testimony in April 2025 could "deliver a nuclear payload to targets throughout North America." In 2025, DIA assessed that the DPRK had "10 or fewer" ICBMs and that it could possess 50 ICBMs by 2035.

North Korea's intermediate-range ballistic missiles (IRBMs) include the liquid-fueled Hwasong-12, which North Korea last tested in 2022, and the solid-fueled Hwasong-16. In 2025, North Korea said it conducted a test of a Hwasong-16B IRBM with a hypersonic glide vehicle (HGV) payload. Such technology could offer greater maneuverability than conventionally armed ballistic missiles, though some analysts have said that North Korea's HGV technology is in an early stage of development.

Short- and Medium-Range Missiles

North Korean SRBMs and medium-range ballistic missiles (MRBMs) pose the most acute near-term threats to South Korea, Japan, and U.S. forces in the region. North Korea's solid-fueled SRBMs have "exhibited aerodynamic flight at lower altitudes and in-flight manoeuvres while entering serial production," according to a 2024 UN Panel of Experts report. Some missile systems may be armed with a conventional or a nuclear warhead; the UN Panel of Experts report stated that North Korea "relies on warhead ambiguity to increase its deterrence." In 2025, North Korea has conducted at least three SRBM tests to date, in January, March, and May.

In the MRBM category, the Pukguksong-2 (KN-15) is a solid-fueled missile capable of carrying a nuclear or conventional payload. North Korea fires the missile from a tracked vehicle, which gives the system mobility and thereby complicates prelaunch targeting of the system.

North Korea has committed to expanding the power of its precision-guided tactical weapons. The KN-23 SRBM has the potential to strike locations throughout the Korean Peninsula with either a conventional or nuclear payload and uses a solid propellant. The KN-24 SRBM is a tactical system with a mobile launcher, solid propellant, and relatively large payload. The KN-25 blurs the line between rocket and missile in that while its design resembles that of a guided artillery rocket, it is also reportedly capable of matching the range and destructive effects of an SRBM.

North Korea's progress with developing submarine-launched ballistic missiles (SLBM) suggests an effort to diversify its ballistic missile forces. The Pukgugsong-3 (KN-26) SLBM was successfully tested beginning in 2019 and is designed to carry a nuclear warhead, according to a 2021 DIA report. North Korea has since revealed the Pukguksong-4, -5, and -6. Some analysts have questioned whether North Korea's development of submarines has kept pace with that of its SLBMs.

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